

REMARKS

In the Office Action dated October 20, 2008, and marked final, the Examiner rejects claims 1-29. Specifically, the Examiner makes the following rejections:

- A. 35 U.S.C. § 102(b)
 - 1. Claims 1, 2, 4, 6, 8-10 and 13 as being anticipated by Nagasubramanian et al. (US Pat. No. 5,599,355).
 - 2. Claims 17-19 as being anticipated by Kejha (US Pat. No. 6,080,511).
 - 3. Claims 1, 2, 5, 6, 8-10, 12, 14 and 15 as being anticipated by Hong et al. (WO 03/065481).
- B. 35 U.S.C. § 103(a)
 - 1. Claims 3 and 7 as being unpatentable over Nagasubramanian et al. in view of Munshi (US Pat. No. 6,645,675).
 - 2. Claims 5, 12, 14 and 15 as being unpatentable over Nagasubramanian et al. in view of Hong et al.
 - 3. Claim 16 as being unpatentable over Nagasubramanian et al. as applied to claim 15 and in further view of Triplett (US Pat. No. 3,566, 985).
 - 4. Claim 11 as being unpatentable over Nagasubramanian et al. in view of Speakman (WO 99/19900).
 - 5. Claims 3 and 7 as being unpatentable over Hong et al. in view of Munshi.
 - 6. Claims 4 and 13 as being unpatentable over Hong et al. in view of Nagasubramanian et al.
 - 7. Claim 11 as being unpatentable over Hong et al. in view of Speakman.
 - 8. Claim 16 as being unpatentable over Hong et al. in view of Triplett.
 - 9. Claims 20-23 as being unpatentable over Nagasubramanian et al. in view of Speakman
 - 10. Claims 20-25 as being unpatentable over Hong et al. in view of Speakman
 - 11. Claims 26-27 as being unpatentable over Hong et al. in view of Triplett as applied to claim 16 and in further view of Speakman
 - 12. Claims 28-29 as being unpatentable over Kejha as applied to claim 17 and in further view of Speakman

With this Amendment, Applicants have amended claims 1, 2, 6, 10-12, 15 and 16. Claims 17-19 and 28-29 have been canceled. After entry of this Amendment, claims 1-16 and 20-27 are pending in the Application. The amendments made herein and submitted pursuant to 37 CFR §1.116 cancel claims and place the remaining claims in condition for allowance by further clarifying what is meant by "individual insulating particles."

Rejections under 35 U.S.C. §102(b)

The Examiner rejects claims 1, 2, 4, 6, 8-10 and 13 under 35 U.S.C. §102(b) as being anticipated by Nagasubramanian et al. Claims 1 and 10 have been amended to clarify that the individual insulating particles are individually applied directly to one or both of the cathode and the anode. Claim 1 further states that the particles are affixed thereto. The amendments are supported in the specification at least in paragraph [0083] and Figs. 5A, 5B, 5D and 6A-C. Nagasubramanian et al. fails to teach or suggest an electrolyte layer comprising an arrangement of individual insulating particles individually applied directly to one or both of the cathode and anode such that the particles are individually affixed to the cathode and/or anode, wherein the particles have a plurality of interstitial spaces therebetween with electrolytes occupying at least some of the interstitial spaces.

Nagasubramanian et al. teaches a "method of forming large area, uniform, composite, solid electrolyte films." (Col. 3, ll. 37-38). The film is utilized in a thin, solid state battery, not produced directly on a cathode or anode. (Col. 4, ll. 51-52). The solid electrolyte film formed by the method of Nagasubramanian does not produce an electrolyte layer of individually affixed insulating particles directly on one or both of the cathode and anode. In addition, Applicants discuss the drawbacks of electrolyte films, in particular, the inability to form the films as thin as the method disclosed by Applicants. (See paragraph [0005]).

Because the battery recited in Applicants' claims 1 and 10 cannot be produced by the method disclosed in Nagasubramanian et al., Nagasubramanian et al. cannot anticipate them. Claims 2, 4, 6, 8 and 9 depend from claim 1 to include all of the limitations therein. At least by this dependency, these claims are not anticipated by Nagasubramanian et al. Applicants respectfully submit that claims 1, 2, 4, 6, 8, 9, 10 and 13 are in condition for allowance, notice of which is requested.

Claims 17-19 are rejected under 35 U.S.C. §102(b) as being anticipated by Kejha. Claims 17-19 have been canceled without prejudice.

The Examiner rejects claims 1, 2, 5, 6, 8-10, 12, 14 and 15 under 35 U.S.C. § 102(b) as being anticipated by Hong et al. Independent claims 1 and 10 have been amended as

described above. Independent claim 15 has been amended to clarify that the individual insulating particles are individually applied directly to one or both of the cathode and the anode and that they are affixed thereto. The amendments are supported in the specification at least in paragraph [0083] and Figs. 5A, 5B, 5D and 6A-C. Hong et al. fails to teach or suggest an electrolyte layer comprising an arrangement of individual insulating particles individually applied directly to one or both of the cathode and anode such that the particles are individually affixed to the cathode and/or anode, wherein the particles have a plurality of interstitial spaces therebetween with electrolytes occupying at least some of the interstitial spaces.

Hong et al. teaches the use of a woven separation membrane that is impregnated with the electrolyte solution. The separation membrane is provided on the surface of a supporting body. (Pg. 13, ll. 22-26 and FIG. 3). More particularly, Hong et al. teaches "an electrochemical cell comprising an anode, a cathode, and a separation membrane which is installed between the anode and the cathode, the separation membrane including a supporting body of the separation membrane, a polymer membrane formed on the supporting body, and a polymer binder membrane formed on the polymer membrane." (Pg. 6, ll. 7-11). The anode and cathode are thermally compressed on the polymer binder to create the cell. (Pg. 25, ll. 11-12). Hong does not teach or suggest directly applying individual insulating particles onto one or both of the cathode and anode as recited in Applicants' claims 1, 10 and 15.

Because Hong et al. does not teach or suggest each of the limitations of claims 1, 10 and 15, each of these claims and their respective dependent claims 2, 5, 6, 8, 9, 12 and 14 are therefore allowable.

Rejections under 35 U.S.C. §103(a)

The Examiner rejects claims 3 and 7 under 35 U.S.C. §103(a) as being unpatentable over Nagasubramanian et al. in view of Munshi and as being unpatentable over Hong et al. in view of Munshi. Nagasubramanian et al. and Hong et al. are discussed above with respect to claim 1, upon which claims 3 and 7 depend. Munshi discloses methods of making a solid polymer electrolyte including stamping the polymer/salt/filler/ionic conductor mixture onto

a substrate. In certain other methods, the process of making a solid polymer electrolyte includes adding a liquid organic solvent to the mixture and evaporating the liquid organic solvent prior to optionally curing the solid polymer electrolyte. In some of these solvent-based casting or coating methods, the process of forming the mixture into a solid polymer electrolyte may include employment of any of a variety of methods, including knife coaters, doctor blade coaters, wire-wound bar coaters (Mayer rods), air knife (air doctor) coaters, squeeze roll (kiss coaters), gravure coaters, reverse roll coaters, cast film coaters and transfer roll coaters. (Col. 9, ll. 9-24).

Applying a solution with any one of the methods to a substrate, as disclosed in Munchi, does not achieve applying individual insulating particles on one or both of the cathode and anode, as disclosed in claim 1, from which claims 3 and 7 depend. Accordingly, combining Munshi with either Nagasubramanian et al. or Hong et al. fails to teach, suggest or render obvious all the features of claim 1 and its dependent claims, including claims 3 and 7. Applicants respectfully submit that claims 3 and 7 are in condition for allowance.

The Examiner rejects claims 5, 12, 14 and 15 under 35 U.S.C. §103(a) as being unpatentable over Nagasubramanian et al. in view of Hong et al. and rejects claims 4 and 13 under 35 U.S.C. §103(a) as being unpatentable over Hong et al. in view of Nagasubramanian et al. As argued above, neither Nagasubramanian et al. nor Hong et al., either alone or in combination, teach, suggest or render obvious an electrolyte layer comprising an arrangement of individual insulating particles applied directly to one or both of the cathode and anode with a plurality of interstitial spaces therebetween, with electrolytes occupying at least some of the interstitial spaces, as recited in claims 1, 10 and 15. For these reasons, claims 4 and 5, which depend from claim 1, claims 12-14, which depend from claim 10, and claim 15 are in condition for allowance.

The Examiner rejects claim 16 under 35 U.S.C. § 103(a) as being unpatentable over Nagasubramanian et al. in view as Hong et al. as applied to claim 15 and in further view of Triplett, and as being unpatentable over Hong et al. in view of Triplett. Triplett is cited for the electric vehicle driven by an electric motor powered by a DC battery having a plurality of cells. However, as argued above, neither Nagasubramanian et al. nor Hong, alone or in combination,

teach, suggest or render obvious an electrolyte layer comprising an arrangement of individual insulating particles applied directly to one or both of the cathode and anode with a plurality of interstitial spaces therebetween, with electrolytes occupying at least some of the interstitial spaces, as recited in claim 15, from which claim 16 depends. Triplett fails in combination with these two references fails to cure this deficiency as Triplett also fails to teach or suggest such an electrolyte layer. Applicants therefore respectfully submit that claim 16 is in allowable form.

The Examiner rejects claim 11 under 35 U.S.C. §103(a) as being unpatentable over Nagasubramanian et al. in view of Speakman and as being unpatentable over Hong et al. in view of Speakman. Speakman is cited for the use of ink jet printing in applications such as catalysts and electrodes. Speakman discloses the use of ink jet "for rechargeable electronically active smart cards for banks, theatres, airports, train/bus stations, conventions and conferences. Such cards will also house a mini display so that the card holder can access data independent of the end use interrogation equipment. . . . Typical dimensions are battery height less than or equal to 2 mm, diameter less than or equal to 20 mm. Recharge cycles have been shown to be as high as 1,000 times." (Pg. 18, ll. 1-11). There is no discussion of using ink jets to manufacture batteries to power vehicles. As argued above, neither Nagasubramanian et al. nor Hong, alone or in combination, teach, suggest or render obvious an electrolyte layer comprising an arrangement of individual insulating particles applied directly to one or both of the cathode and anode with a plurality of interstitial spaces therebetween, with electrolytes occupying at least some of the interstitial spaces as recited in claim 10, from which claim 11 depends. Combining Speakman with these two references fails to cure this deficiency since Speakman also does not teach or suggest such an electrolyte layer. Applicants therefore respectfully submit that claim 11 is in allowable form.

The Examiner rejects claims 20-23 as being unpatentable over Nagasubramanian et al. in view of Speakman. Claims 20 and 21 depend from claim 1 and claims 22 and 23 depend from claim 10 to respectively include all of the limitations therein. As discussed above, Nagasubramanian et al. and Speakman, alone or in combination, fail to teach, suggest or render

obvious the limitations recited in claims 1 and 10, and therefore their dependent claims 20-23.

Applicants respectfully submit that claims 20-23 are in condition for allowance.

The Examiner rejects claims 20-25 as being unpatentable over Hong et al. in view of Speakman. Claims 20-25 each depend from one of claims 1, 10 and 15 and respectively include all of the limitations therein. As discussed above, Hong et al. and Speakman, alone or in combination, fail to teach, suggest or render obvious the limitations recited in claims 1, 10 and 15, and therefore their dependent claims 20-25. Applicants respectfully submit that claims 20-25 are in condition for allowance.

The Examiner rejects claims 26 and 27 as being unpatentable over Hong et al. in view of Triplett as applied to claim 16, and in further view of Speakman. Claims 26 and 27 depend from claim 16 to include all of the limitations therein. As discussed above, Hong et al., Triplett and Speakman, alone or in combination, fail to teach, suggest or render obvious the limitations recited in claim 16, and therefore its dependent claims 26 and 27. Applicants respectfully submit that claims 26 and 27 are in condition for allowance.

The Examiner rejects claims 28 and 29 as being unpatentable over Kejha as applied to claim 17, and in further view of Speakman. Claims 28 and 29 have been canceled without prejudice.

Conclusion

It is submitted that this Amendment has antecedent basis in the application as originally filed, including the specification, claims and drawings, and that this Amendment does not add any new subject matter to the application. Reconsideration of the application as amended is requested. It is respectfully submitted that this Amendment places the application in suitable condition for allowance; notice of which is requested.

As mentioned above, Applicants believe that this Amendment is suitable for entry under 37 CFR §1.116 because it cancels rejected claims and adds no new claims, reducing issues for appeal. Further, it places the remaining claims in condition for allowance by further clarifying what is meant by "individual insulating particles."

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If the Examiner feels that prosecution of the present application can be expedited by way of an Examiner's amendment, the Examiner is invited to contact undersigned at the telephone number listed below.

Respectfully submitted,

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